

therefore, have to be limited only to emergency cases such as the type of case reported by Doctor Vecki or where there may be considerable acute distress from hematuria, calculus, etc. It would appear to me that such a procedure as nephrectomy would practically never be indicated. My experience with surgery in polycystic kidneys is limited to several cases in which Rovsing's operation of multiple cyst punctures was carried out. From the results, I have concluded that the patients would have gotten along just as well without my interference.

Where operation is absolutely necessary it is well to consider carefully the anesthesia used. Ether, especially, is contraindicated, and general anesthesia such as ethylene-oxygen and nitrous oxid oxygen anesthesia as well as such regional anesthesia as spinal, paravertebral block, and local, should be considered of choice so as to keep at a minimum the additional load on the already deficient renal system. It is remarkable how well many individuals with polycystic kidneys will get along even though there is a very low phthalein output and a blood nitrogen above normal. In conclusion permit me to say that elective surgical procedures be kept at an extreme minimum in patients with polycystic kidney disease and limited only to such emergency cases that demand immediate attention.

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FRANK HINMAN, M. D. (384 Post Street, San Francisco).—The case of Doctor Vecki presents some interesting points in differential diagnosis. The clinical history—a woman of forty-one, recurrent right renal colic for the last five months accompanied by hematuria and chills and fever, the last and most severe attack one week before entry—points to trouble in the right kidney, no trouble in the left. The septic condition, normal blood pressure, secondary anemia with leukocytosis and urinalysis (pus, blood, specific gravity 1010, slight albumen, no casts, many bacteria), together with this history suggests an infectious nephritis and not Bright's, and the physical examination indicates perirenal extension.

Subsequent urogenital studies confirm this but, in the light of the known operative and autopsy findings, should have gone farther possibly in interpretation of the true condition.

The total renal function is practically nothing, but there is no anuria or even oliguria. The amount of 225 cubic centimeters in two hours is a good output. With such marked sepsis and renal insufficiency a hypersecretion without hypertension suggests bilateral hydronephrosis, bilateral solitary cysts or polycystic disease. The blood nitrogen retention of 250 milligrams with a creatinin of 12 milligrams supports this view. Renal insufficiency must be of long duration and not recent or acute to allow of such retention. Plain x-rays are negative, ruling out bilateral staghorn calculus. On ureteral catheterization the left kidney showed a free output of clear urine with few pus cells and many bacteria but no phthalein, thus clearly indicating the bilateral nature of the renal insufficiency. As a confusing finding the right kidney failed to function, but there was no evidence of pelvic retention on either side, thus ruling out bilateral hydronephrosis. Had pyelograms been taken or intravenous pyelography done, no doubt a correct preoperative diagnosis would have been made. Under the circumstances it was, of course, of no consequence, but from the theoretical standpoint the findings which are reported seem to limit possibilities nearly to two conditions, bilateral solitary cyst or polycystic kidneys, complicated by a suppurative pyelonephritis with perinephritic abscess. Bilateral solitary cyst is very rare. A recent case had been diagnosed for over ten years as polycystic. The important distinction is that the one is curative, the other hopeless, and differentiation is only possible, as a rule, by pyelography.

The pictures of the kidneys on section indicate that the left kidney was more advanced than the right in polycystic degeneration. The larger size of the right may be due to the swelling and congestion of inflammation. This is interesting in explanation of the marked total renal insufficiency, the function of the better right kidney being totally lost on account of the complicating suppurative nephritis. The source of the renal infection is indicated neither by the history nor the postmortem.

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DOCTOR VECKI (Closing).—The futility of surgical interference in polycystic kidney was properly emphasized by the discussions of Doctors Gibson and Kutzmann and I must readily agree with them that it is only indicated in emergency cases.

Doctor Hinman pointed out that a more complete urological examination would have permitted a diagnosis before surgical intervention. The poor physical condition of that patient, however, had to be taken into consideration.

CONTUSION HEMORRHAGES OF THE BRAIN*

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THIS discussion will be limited to the type of brain injuries manifested by the presence of contusion hemorrhages or bruises. A few typical examples will be presented to illustrate the lesions in question. I wish to briefly present what these lesions are, where, and why they occur, and their importance. This report is based on gross and microscopic studies of seventy-eight brains examined in the pathological department of the coroner's office of the city and county of San Francisco.

PATHOLOGIC FACTORS AND CHANGES

Injuries to the brain occur as the result of the action of external violence applied either directly or indirectly to the cranium. The damage produced in the brain in any given individual will depend on the direction, point of application, and the amount of force, as well as the resistance of the individual. There are three principal factors concerned in natural resistance, *i. e.*, thickness and shape of the skull, condition of the blood vessels, and a great unknown quantity, the degree of sensitiveness of the brain to shock. For example, a blow from the fist of a prizefighter would kill one individual, yet when applied similarly to the head of one trained to withstand such blows it might have no appreciable effect.

Contusion hemorrhages, so called, are small hemorrhagic foci—usually visible to the naked eye—varying in size from that of a pin-point to several millimeters in diameter, but at times they may exceed one centimeter. They are usually present in the brain substance just beneath the pia mater, where they occur singly or in groups in the principal regions of injury, or they may be scattered here and there through the entire brain. There is no part of the brain in which they have

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not been found in this series. Occasionally only deeply seated lesions are present.

For examination purposes, it is best to harden the brains in 10 per cent formalin solution before making a search for the *deeply* seated lesions. After fixation the brain is sliced transversely into sections not to exceed one centimeter in thickness.

These hemorrhages occur at the points of application of the forces concerned in the injury. They may be immediately beneath the point of application, opposite, or scattered, because of widely disseminated acting secondary forces within the brain. The location of the lesions is different in a falling body than in one which is stationary when the violence is applied. Time will not permit a detail discussion of the mechanics of the problem. Concussion forces, direct or transmitted, are largely responsible for this type of lesion through mechanical rupture of small blood vessels. If the blood vessels are diseased, then larger hemorrhages, immediate or delayed, occur.

These lesions are of importance, first, because they may cause death if properly located; second, they result in points of lowered resistance sufficient to account for the invasion of bacteria which may cause abscesses or meningitis or both; third, they account for later mental impairment of varying degrees; and fourth, they are pathognomonic signs of injury. In medico-legal work it is of great importance at times to determine whether death is traumatic or the result of natural causes. This series contains instances where both types of lesions are present.

The seventy-eight brains which were examined and which are herewith reported were removed from the bodies dead from known accidental and unknown causes, by Dr. A. A. Berger, autopsy surgeon. In other words, they were taken from a certain group which must pass through the routine of the coroner's office—such as persons killed in automobile, street-car and other accidents, suicides, homicides, fistic encounters, and those found dead on the bathroom floor, etc. Several with gunshot wounds of the head were included. Thirty-four of these dead persons had no skull fracture, while several of these had no evidences of injury to the scalp or pericranial tissues. Thirty-eight had fractured skulls and six of them had penetrating wounds as the result of gunshot.

There are seven instances of purulent meningitis complicating the injury. Two of these occurred in individuals without skull fractures.

The brain lesions in some were incidental to the principal causes of death. Where the events preceding death are unknown, one can oftentimes obtain considerable information about them by carefully noting the distribution of the lesions.

In conclusion I wish to state that this report is made merely to call your attention to a type of lesions commonly present in brains after seemingly trivial injury, but which may be of great importance from both medico-legal and clinical standpoints.

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ON PREMEDICAL EDUCATION*

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MEDICINE presents itself as a study and as a profession. The study of disease is a pure science. The application of that science to the prevention of disease and injury and to the care of the sick and injured appertains to the profession of medicine, which hence deals essentially with an applied science. The medical applications of science may be considered as falling into at least two categories: (1) epidemiological, wherein attention is directed toward the *disease* as an entity, mankind being considered only in the mass; (2) clinical, wherein attention is focused primarily upon the *patient*, the disease being considered only in the light of its effects upon the person in question. In this latter, the ordinary type of medical practice, mankind is considered individually.

Disease is perhaps most helpfully thought of as a set of phenomena (structural or functional or both) occurring within the body (or mind) in response to a certain stimulus or combination of stimuli. At least in many cases, the observed phenomena constitute the normal reaction of that individual at that time to that stimulus; for example, a temperature of about 102 degrees Fahrenheit is a normal reaction on the part of an individual who is battling for his life against a horde of invading pneumococci. In biology (including medicine) the fundamental unit is the individual; since no two human beings are quite alike, either structurally or functionally, they differ, among other things, in their reactions to abnormal stimuli. Hence people exhibit biological differences both in their manifestations of disease and in their responses to treatment. For this reason clinical medicine must be the medicine of the individual.

MEDICINE AS AN APPLIED SCIENCE

As an applied science, medicine differs from other applied sciences in the nature of its material—human beings; herein, of course, lies its importance and its fascination. In this connection may I quote the following from the pen of Lord Moynihan: "To give courage to those who need it, to restore desire for life to those who have abandoned it, with our skill to heal disease or check its course—this is our great privilege. Ours are not the mild concerns of ordinary life. We, who like the Happy Warrior are 'doomed to go in company with Pain and Fear and Bloodshed,' have a higher mission than other men and it is for us to see that we are not unworthy."

This peculiar nature of the material with which we work places upon the medical profession almost unparalleled responsibilities. Think, for example, of the responsibility that is his whose patient may possibly be suffering from bubonic plague. Naturally, unusual powers and privileges are granted to the members of such a profession.

*Being the substance of some after-dinner remarks addressed to the Premedical Club of the University of California on September 15, 1931.